

Amendments to the Claims

Claims 1-11 (canceled).

12. (previously presented) A method of making a white light source, comprising: encapsulating a light-emitting diode in an epoxy resin having a phosphor dispersed therein, the light emitting diode having an emission from 420 to 490 nm, and the phosphor having a garnet structure as represented by  $A_3B_5O_{12}:Ce$  wherein A is terbium or terbium together with at least one of the elements Y, Gd, La, and/or Lu and B is at least one of the elements Al and Ga, the phosphor converting at least a part of the emission from the light-emitting diode into a longer-wave radiation.

13. (previously presented) The method of claim 12 wherein A is solely or predominately terbium.

14. (previously presented) The method of claim 12 wherein the light-emitting diode has an emission from 430 to 470 nm.

15. (previously presented) The method of claim 13 wherein the light-emitting diode has an emission from 430 to 470 nm.

16. (previously presented) The method of claim 12 wherein B additionally contains In.

17. (previously presented) The method of claim 12 wherein the light-emitting diode is based on Ga(In)N.

18. (previously presented) A method of making a white light source, comprising: encapsulating a light-emitting diode in an epoxy resin having a phosphor dispersed therein, the light emitting diode having an emission from 420 to 490 nm, the phosphor converting at least a portion of the emission from the light-emitting diode into a longer-wave radiation and having a garnet structure represented by

$(Tb_{1-x}RE_xCe_y)_3(Al,Ga)_5O_{12}$ , where  
RE is Y, Gd, La and/or Lu;  
 $0 \leq x \leq 0.5-y$ ; and  
 $0 < y < 0.1$ .

19. (previously presented) The method of claim 18 wherein  $x$  is in the range  $0.25 \leq x \leq 0.5-y$ .
20. (previously presented) The method of claim 18 wherein  $y$  is in the range  $0.02 < y < 0.06$ .
21. (previously presented) The method of claim 18 wherein  $x$  is in the range  $0.25 \leq x \leq 0.5-y$  and  $y$  is in the range  $0.02 < y < 0.06$ .
22. (previously presented) The method of claim 18 wherein the light source has a color temperature of below 5000 K.
23. (previously presented) The method of claim 18 wherein the light source has a color temperature of 4500 K.
24. (previously presented) The method of claim 12 wherein the phosphor contains from 0.03 to less than 3 moles of terbium per mole of phosphor.
25. (previously presented) The method of claim 18 wherein the light-emitting diode is based on Ga(In)N.
26. (previously presented) A method of making a white light source, comprising:  
encapsulating a light-emitting diode in an epoxy resin having a phosphor dispersed therein, the light emitting diode having an emission from 420 to 490 nm, the phosphor converting at least a portion of the emission from the light-emitting diode into a longer-wave radiation, the phosphor having a garnet structure represented by

$(Tb_xRE_{1-x-y}Ce_y)_3(Al,Ga)_5O_{12}$ , where  
RE is Y, Gd, La and/or Lu;  
 $0.01 \leq x \leq 0.02$ ; and  
 $0 < y < 0.1$ .

27. (previously presented) The method of claim 26 wherein  $x$  is 0.01.
28. (previously presented) The method of claim 26 wherein  $y$  is in the range  $0.01 \leq y \leq 0.05$ .
29. (previously presented) The method of claim 27 wherein  $y$  is in the range  $0.01 \leq y \leq 0.05$ .

30. (currently amended) The method of claim 27 wherein the phosphor has a garnet structure represented by (Y<sub>0.50</sub>Gd<sub>0.45</sub>Tb<sub>0.01</sub>Ce<sub>0.04</sub>)<sub>3</sub>Al<sub>5</sub>O<sub>12</sub> ( $\text{Y}_{0.50}\text{Gd}_{0.45}\text{Tb}_{0.01}\text{Ce}_{0.04})_3\text{Al}_5\text{O}_{12}$ .

31. (previously presented) The method of claim 26 wherein the light-emitting diode is based on Ga(In)N.

32. (new) A process for producing a phosphor having a garnet structure as represented by A<sub>3</sub>B<sub>5</sub>O<sub>12</sub>:Ce, wherein A is terbium or terbium together with at least one of the elements Y, Gd, La, and/or Lu and B is at least one of the elements Al and Ga, the process comprising:

- (a) intimately mixing cerium oxide, oxides of A and B, and at least one flux to form a mixture; and
- (b) firing the mixture in forming gas to form the phosphor.

33. (new) The process of claim 32 wherein the flux is BaF<sub>2</sub>, HBO<sub>3</sub>, or both.

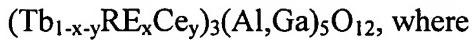
34. (new) The process of claim 32 wherein the forming gas is a mixture of nitrogen and hydrogen gases wherein the hydrogen is 2.3% by volume.

35. (new) The process of claim 32 wherein a stoichiometric excess of an oxide of B is used to form the mixture.

36. (new) The process of claim 32 wherein a stoichiometric excess of aluminum oxide is used to form the mixture.

37. (new) The process of claim 32 wherein A is predominantly or solely terbium.

38. (new) The process of claim 32 wherein the phosphor has a garnet structure represented by



RE is Y, Gd, La and/or Lu

$0 \leq x \leq 0.5-y$ ; and

$0 < y < 0.1$ .

39. (new) The process of claim 32 wherein the mixture is fired at a temperature from 1450°C to 1550°C.

40. (new) The process of claim 39 wherein the mixture is fired for 3 hours to 6 hours.

41. (new) A process for producing a phosphor having a garnet structure as represented by  $A_3B_5O_{12}:Ce$ , wherein A is terbium or terbium together with at least one of the elements Y, Gd, La, and/or Lu and B is at least one of the elements Al and Ga, the process comprising:

- (a) intimately mixing cerium oxide, oxides of A and B, and at least one flux to form a mixture;
- (b) firing the mixture in forming gas;
- (c) milling the fired mixture; and
- (d) firing the mixture in forming gas for a second time to form the phosphor.

42. (new) The process of claim 41 wherein the firings are performed at a temperature from 1450°C to 1550°C.

43. (new) The process of claim 42 wherein the firings are each for three hours.

44. (new) The process of claim 41 wherein a stoichiometric excess of an oxide of B is used.

45. (new) The process of claim 41 wherein a stoichiometric excess of aluminum oxide is used.

46. (new) The process of claim 41 wherein A is predominantly or solely terbium.

47. (new) The process of claim 41 wherein the flux is BaF<sub>2</sub>, HBO<sub>3</sub>, or both.

48. (new) A process for producing a phosphor having a garnet structure as represented by (Tb<sub>1-x-y</sub>RE<sub>x</sub>Ce<sub>y</sub>)<sub>3</sub>(Al,Ga)<sub>5</sub>O<sub>12</sub>, where

RE is Y, Gd, La and/or Lu

0 ≤ x ≤ 0.5-y; and

0 < y < 0.1;

the process comprising:

- (a) intimately mixing cerium oxide and terbium oxide with at least one flux and at least one oxide of RE, Al, and/or Ga, to form a mixture;
- (b) firing the mixture in forming gas;
- (c) milling the fired mixture; and
- (d) firing the mixture in forming gas for a second time to form the phosphor.

49. (new) The process of claim 48 wherein a stoichiometric excess of aluminum oxide is used.

50. (new) The process of claim 48 wherein the firings are performed at a temperature from 1450°C to 1550°C.

51. (new) The process of claim 50 wherein a stoichiometric excess of aluminum oxide is used.

52. (new) The process of claim 51 wherein the firings are each for three hours.